

SALT SPREADER SPECIFICATIONS

TAILGATE SPREADER, AUGER TYPE 201 STAINLESS STEEL SPECIFICATIONS (ITEM ID 1000120019)

- 1) TYPE - SINGLE AUGER
- 2) WIDTH - 96"
- 3) HOPPER - 7 GAUGE 201 STAINLESS STEEL, CONTINUOUS WELD
- 4) COVER PLATE & - MANUFACTURED FROM 7 GAUGE 201 STAINLESS STEEL, DESIGNED FOR EASY CLEAN OUT FROM BOTH TOP & BOTTOM. REAR PLATE ALSO TO SERVE AS A SPILL PLATE OVER AUGER FOR DUMPING OVER & ACROSS THE SPREADER HOPPER CLEAN-OUT & DUMPING FEATURES SHALL BE ACCOMPLISHED WITHOUT THE USE OF TOOLS, PINS, LATCHES, ETC., SHALL BE SECURED TO SPREADER BY MANUFACTURER DESIGN
- 5) ANTI-SPILL COVER PLATE - MUST PREVENT MATERIAL FREE FLOW WHEN AUGER IS IDLE. REMOVABLE WITHOUT TOOLS.
- 6) TAILGATE SPILL PLATE - MANUFACTURED FROM 7 GAUGE MINIMUM STEEL, PLATE DESIGNED FOR ATTACHING TO INSIDE TAILGATE AT ENDS TO PREVENT MATERIAL SPILLAGE AT END OF SPREADER WHEN TAILGATE IS AT IT'S MAXIMUM OPENING FOR MATERIAL SPREADING.
- 7) AUGER - FULL WIDTH - 7 FT., MANUFACTURED FROM MINIMUM 2 3/8" O.D. SCHEDULE 80 PIPE. 6" SINGLE, ONE-WAY DIRECTIONAL STEP FLITE OR CONTINUOUS WITH 3/8" FLITES, DESIGNED TO SEND MATERIAL TO EXTREME LEFT.
 *NOTE: AUGER MUST MOVE SALT TO THE EXTREME LEFT, AN OFFSET TO BRACE WILL NOT BE ACCEPTABLE. SPINNER MUST BE VISIBLE FROM DRIVER'S MIRROR. (REVERSE FLIGHT WILL NOT BE ACCEPTABLE)
- 8) AUGER DRIVE - HYDRAULIC MOTOR, CHARLYNN, MOUNTED TO A 5:1 REDUCTION WORM GEAR TYPE, GEAR BOX SPEED REDUCER DEVELOPING 4,224 INCH POUNDS OF TORQUE.
 *NOTE: CHAIN AND SPROCKET UNACCEPTABLE
- 9) BEARINGS - SELF-ALIGNING, SEALED, DUST-PROOF GREASE FITTINGS. MINIMUM 1 1/4" I.D.
- 10) SPINNER (SINGLE) - 18" MINIMUM, 201 STAINLESS STEEL FORMED FOR LOW TRAJECTORY WITH SIX (6) STAINLESS STEEL 3/16" REPLACEABLE FINS. ADJUSTABLE SPREAD LEFT TO CENTER TO RIGHT. SPINNER TO BE LOCATED EXTREME LEFT SIDE OF SPREADER.
- 11) SPINNER SHIELD - SHIELD TO BE PROVIDED TO PREVENT SALT FROM STRIKING TRUCK.
- 12) STABILIZER OR PARALLEL BAR: TO KEEP SPINNER PARALLEL TO ROAD AT ALL DUMP ANGLES.
- 13) HOSE HYDRAULIC - WIRE BRAID PRESSURE & RETURN OF SUFFICIENT LENGTH TO HOOK UP SPREADER TO REAR OF TRUCK'S CENTRAL HYDRAULIC SYSTEM. HOSE END TO BE FURNISHED LESS QUICK DISCONNECT COUPLER.
- 14) HOSE SIZE - SPINNER: 1/2"
 AUGER: 1/2"

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RETURN LINE: 3/4"

- 15) OTHER REQUIREMENTS - SPREADER TO BE DELIVERED WITH ALL NECESSARY COMPONENTS; BRACKETS, HYDRAULIC HOSES, & ACCESSORIES NECESSARY TO FORM A COMPLETE UNIT FOR INSTALLATION & PROPER OPERATION.
 - 16) THROUGH MOUNTING - QUICK ATTACH OR REMOVAL WITH NO PARTS TO DETACH HEAVY DUTY STEEL ROD LATCHES
 - 17) COLOR - BLACK (NOTE: ANY COMPONENTS MFG. FROM GRAD 201 STAINLESS STEEL DO NOT REQUIRE PAINT.)
 - 18) WARRANTY - ONE (1) YEAR, 100% PARTS & LABOR AGAINST DEFECTS IN MATERIALS & WORKMANSHIP.
 - 19) GENERAL - RESPONSIVE VENDORS BIDDING "OR EQUAL" BRANDS & MODELS ARE REQUIRED TO OUTLINE ON A SPECIFICATION SHEET, THE FEATURES FOR THEIR BRAND/MODEL.
MANUFACTURER'S STANDARD MODEL MAY BE MODIFIED AS NECESSARY TO MEET ACCEPTABLE MINIMUM SPECIFICATIONS.
SUCCESSFUL BIDDER MUST PROVIDE A MANUFACTURER'S LETTER AS TO ALL MODIFICATIONS FOR THE MODEL PROPOSED.
- NOTE: SPREADER WILL OPERATE FROM A CENTRAL HYDRAULIC SYSTEM.
HYDRAULIC PUMP, RESERVOIR, FILTER & SPREADER CONTROL ARE NOT REQUIRED.
- 20) MANUFACTURER'S DESIGN - SPREADER DESIGNED SO SPREADER'S TOP COVER CAN OPEN WHEN TRUCK'S DUMP BED TAILGATE IS CLOSED.
(4" SPACER REQUIRED BETWEEN TRUCK TAILGATE & SPREADER)
 - 21) PILOT MODEL - DEPARTMENT OF TRANSPORTATION RESERVES THE RIGHT TO REQUIRE ONE PILOT MODEL TO NASHVILLE F.O.B. DELIVERY POINT.
 - 22) MANUALS - PARTS & MOUNTING INSTRUCTIONS

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V- BOX MATERIAL SPREADER SPECIFICATIONS, 10 FT (ITEM ID 1000120006)

1. General Description:

- a. This specification shall describe a v-box material spreader capable of hauling and spreading free flowing granular materials from a width of four (4) to forty (40) feet.
- b. This unit will consist of a hopper, Dual Auger discharge/feed, spinner disc, power drive, and all components necessary to make a complete operating unit.
- c. All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- d. This unit shall be factory ready to accept or retrofit servo controls.
- e. All stainless steel used in the production of this unit shall be corrosion resistant, non-magnetic stainless steel.
- f. The manufacturing and production of this unit shall be of the best commercial practices and only materials of the finest quality are to be used.
- g. Bidders must submit with their bid complete specifications on the unit they propose to furnish.
- h. Hopper body sides shall be constructed of 304 Grade, 10 GA. minimum non-magnetic stainless steel. Hopper sides shall be formed of one solid piece. **NO WELDED SEAMS OR SPLICES ON THE SIDE SHEET ARE PERMITTED.**

2. Body:

- a. Construction – 10 Ga. 304 minimum non-magnetic stainless steel with a double crimped top edge forming a 2" section for greater rigidity.
- b. Hopper body Length – 10' with 2' of longitudinal overhang for unloading material to the spinner assembly.
- c. Outside Width – 82" maximum
- d. Side Height – 54" maximum
- e. Capacity – Approximately 5.4 cubic yards water level full
- f. Body sides – 10 ga. 304 Stainless steel with no less than 45 degree pitch to ensure free flow of material to the auger trough. Sides are to be constructed using a single sheet of 304 stainless steel NO SPLICES
- g. Body ends – 10 ga. 304 stainless steel. Front sheet shall be sloped so as not to interfere with an internally mounted telescopic hoist incorporating a cylinder dog house, if required.
- h. Body longitudinal – Shall be manufactured of 10 ga. Non-magnetic stainless steel.
- i. Inside weld – Spreader body shall be 100% welded on the inside.
- j. Channel cross sills – Shall be 7 ga. Non-magnetic stainless steel that tie the lower edge of the longitudinal to each side support.
- k. Cross supports – Shall be wide enough to allow the hopper box to be mounted on various width truck frames or slide into a dump box.
- l. Top – A 4" X 6" formed non-magnetic stainless steel bolt in box beam shall be elevated 3" above the top edge of the hopper, thus providing a longitudinal brace and hinge point for the top screens.
- m. Channel – There shall be a 3" formed non-magnetic stainless channel welded under the H-beam to each hopper side for additional side support.
- n. Body welding – body and auger channel shall be electrically welded into a rugged solid unit
- o. Side supports – There shall be 12 ga minimum formed non-magnetic stainless steel side supports that extend the full angle height spaced on 2' centers.
- p. Lift Hook – A heavy duty non-magnetic stainless steel lift hook shall be provided at each corner.

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- q. Mounting kit – Mounting kit is to include;
 - i. 4 ea. 4" nylon load straps which will attach to the pockets welded to the spreader hopper. These straps will be secured to the truck body with 4" capacity, cargo winches (which are to be welded to the dump body).
 - ii. 1 ea. 3" X 3" X 3/8" structural steel angle to run between the left and right side tailgate latch. The latch bar is to have a 1-1/4" round pin stock welded to the latch bar angle and positioned to allow the dump body tailgate locks to latch over the pins in order to hold the spreader securely into the dump body.
 - iii. All stainless steel joints shall be welded with stainless steel welding wire.
 - iv. All sub-assemblies shall be secured with stainless steel hardware
 - v. A mounting kit shall be provided to safely secure the hopper to the truck.

3. Auger System:

- a. The dual auger system shall be twin augers 7" in diameter running longitudinally with the body, feeding material the full length of the hopper.
- b. The augers shall consist of a 4" O.D. steel pipe with a 2" steel end shaft and steel fitting continuously welded the full length.
- c. The fluting shall be 1/2" thick steel. The fluting shall have (3) different pitches so the hopper will unload evenly from the front, middle and rear. Outer edge of fluting shall include welded steel hardened matrix.
- d. The augers shall be driven by dual 14 H.P. hydraulic motors. The motors will drive dual gear boxes providing a 3.6 – 1.0 ratio and shall be directly coupled by a spline shaft coupling to the augers or shall be dual hydraulic motors direct coupled to the auger shaft. The hydraulic motors shall have sufficient power to maintain constant spread rate of dry or wet materials.
- e. The coupling shall be equipped with a grease fitting so that the motor spline and coupling can be lubricated.
- f. The idler end of the auger shall be supported by a 4 bolt flange, heavy duty, dust sealed, self-aligning ball bearing.
- g. This bearing shall be able to be lubricated from the rear of the body.
- h. Both the auger drive and idler end plate shall be manufactured from 3/16" Stainless steel.
- i. A height adjustable stainless steel inverted vee shall be provided to keep material load off the auger for easier auger start-up.
- j. A protective stainless steel grate shall be placed over the exposed auger outside the hopper.
- k. A closed loop auger sensor is to be installed on the passenger side auger shaft at the front of the spreader. Wiring for the sensor is to be run to the rear of the spreader. This pulse sensing line must be capable of being connected to the chassis mounted pulse sense wiring in order to provide closed loop operation.
- l. The spreader shall be equipped with a safety interlock device to positively prevent power from reaching the auger motor when the auger cover and top screens are opened beyond the normal operation position.

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- m. The auger floor shall be manufactured of $\frac{3}{4}$ " UHMW polyurethane. It shall be of a curved designed and shall be replaceable. The floor shall be supported on 12 gauge stainless steel cross angles spaced approximately 12" apart.

4. Spinner Assembly:

- a. Distributer disc – 22" diameter, made of polyurethane
- b. Mounting – Disc shall be mounted on a steel replaceable hub connected directly to the hydraulic drive motor.
- c. Material shall be guided from the Auger trough to the distribution disc by means of a 10 Ga. polyurethane tapered chute which is attached to the discharge opening of the spreader by means of a single stainless steel pin. The chute must be adjustable to direct salt flow to front, center and rear of the spinner in order to direct salt to the left or right of spinner center without using any tools
- d. Spinner frame shall be manufactured of 12 ga stainless steel and shall include a one piece tapered deflector system.
- e. Spinner shall be mounted independently from the V box. The spinner will be installed into the 4" receiver tube hitch assembly supplied with the dump truck, to allow for cleaning, storage and unloading from the conveyor without the interference from the spinner assembly.
- f. Spinner shall be capable of being stored on material spreader when not in use and shall not interfere with the loading or unloading of spreader.

5. Top Screens:

- a. Top screens shall be constructed of $\frac{3}{8}$ " steel rods welded to form a 2.5" square mesh, which is framed by a combination of $\frac{1}{4}$ " X 1-1/2" flat steel and 2" angle iron with the edge supports reinforced by $\frac{1}{2}$ " X 1" flat bars.
- b. Top screens shall be removable and use drop-n-loc type hinge.
- c. Screens utilizing hardware that may vibrate loose are not acceptable.
- d. Screens are to be hot dipped galvanized. PAINTED SCREENS ARE NOT ACCEPTABLE.

- 6. **Painting** – All stainless steel shall be left unpainted. Carbon steel components shall be chemically cleaned, or sand/media blasted and coated with a lead free rust inhibitive primer and painted with lead free black enamel.

7. Liquid Chemical Storage:

- a. Two side mounted 225gallon polyethylene reservoir tanks, one per side shall be provided to allow a total of 450 gallons of liquid capacity.
- b. A 3" top fill port with splash proof vent and a 2" suction port are to be provided in each tank.
- c. A plumbing/quick fill kit is to be included consisting of:
 - i. Shut-off valves at each tank end
 - ii. Banjo coupler and all necessary fittings to plumb the tanks together
 - iii. Provisions to fill one tank only or both tanks at the same time.
 - iv. Quick drain valve is to be plumbed into the system on the passenger side of the vehicle.

- 8. **Conspicuity** – Spreader shall be outfitted with DOT-C2 11" red/7"white or 6"red/6"white parabolic retro-reflective conspicuity tape (Reflexite, 3M or equal) as per TDOT guidelines. Layout pattern shall be provided to the successful bidder.

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9. Ladder

Stainless steel folding ladder is to be provided and installed on the curb side rear of the spreader hopper. The ladder is to be constructed using 100% non-magnetic stainless steel material including stainless steel grip punched ladder rungs, vertical bracing and grab handle tubes on each side of the ladder treads and all hardware. The ladder shall provide a "three" point access to the top screens for cleaning

10. Leg Stand Frame:

Leg stand frame and legs shall be hot dipped galvanized **OR** stainless steel. Leg stand shall be constructed using 3" X 3" X 3/16" tubing which form four long-members running the length of the stand that support the V box. The front of the stand assembly includes two folding and self-storing 3" X 3" tubular legs which will support the empty weight of the spreader when it has been removed from the dump body. Front legs are to have a minimum of three grease zerks to lubricate the inner tube on which the leg assembly rotates.

The stand shall be equipped with holes spaced on 24" centers for mounting to v-box spreader.

Entire leg-stand frame shall be welded solid where possible.

Legs:

Rear spreader legs are constructed using 3 1/2" X 3 1/2" X 1/4" tubing. **The legs must be capable of lifting above the height of at least 35" above the ground level so as not to interfere with trailer connections and operation.**

Front legs shall be designed to lock at an angle of 90 degrees down in relation to the frame rails for storage, and shall also be designed to swing up, nest between frame rails, and lock for installation into the dump body.

Left and right front upper legs shall be connected by a cross tube constructed from formed 7 gauge steel. Front legs to be bolted to the cross tube.

Left and Right front legs shall be equipped with 1/2" diameter spring loaded pins to lock the legs in the standing and folded positions.

Front upper legs shall be equipped with 5/8" diameter spring-loaded pins to lock lower leg into the desired height.

The spreader stand shall include a guide plate system to assist in loading the spreader into the truck body.

Guide plates are to be constructed using 1/2" thick stainless steel plates which are tapered to guide the spreader into the correct position inside the body and must be designed to position the spreader in the center of the body and thus protect the liquid tanks from damage if the spreader is not properly positioned when loading the unit has begun.

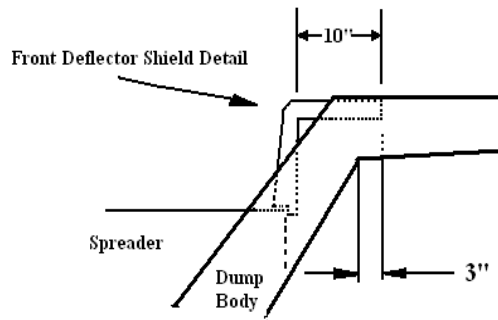
11. TDOT Salt Spreader Material Deflector System

All V-Box slide-in material spreaders are to be delivered, equipped with the following material deflector system installed on the spreader.

- a. Spreader is to be equipped with a front deflector shield and be constructed from 10 Ga., 201 nonmagnetic stainless steel.

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- b. Front deflector is to be welded to the front wall of the spreader body on an angle so as to be self-cleaning, and properly braced to carry the weight of salt that may not fall into the top of the spreader while loading.
- c. Front deflector shield is to extend forward a minimum of 10" in front on the spreader head sheet and must also be long enough to extend over the dump body cab shield a minimum of three inches.



Acceptable Brands: Viking, Flink, or equal.

Specifications for Spreaders, Electric, 11.0 Cubic Foot (Item ID 1000176368)

Hopper Construction

The spreader shall be a low profile design mounted in a powder coated steel frame.

Hopper material shall be 3/16" LLDPE Polyethylene with UV Stabilizer. Hopper dimensions shall be 36" X 44" X 24".

Hopper wall angle shall be 49°. Hopper capacity shall be 11 cubic feet/800lbs.

Empty spreader weight is 152 lbs.

The spreader attachment system shall be either a standard slide-in receiver hitch mount or an optional RT3 mount.

The spreader is designed to mount to a class 4-5 receiver hitch on ¾ or 1 ton trucks.

Stabilizer arms and ratchet tie-down straps are standard.

Electrical/Control System

Power for the spreader motor comes directly from the vehicle battery.

The truck electrical system shall be protected by a 40 amp fuse located near the battery.

The spreader control system is isolated from the vehicle electrical system. The vehicle electrical system is further protected by two 10 amp fuses in the spreader control harness near the battery. The spreader motor shall be an enclosed high torque 12 volt design equipped with a thermal shut-off for additional protection.

The controller shall have a variable speed dial with blast feature and overload function.

Feed Mechanism

Material shall be delivered by an internal auger with cable-link agitator powered directly by the 12 volt high-torque motor.

Spinner shall be 12" diameter polyurethane powered directly from motor.

Adjustable feed gate is standard. An adjustable polyethylene deflector shall be standard. Deflector shall adjust material spread width from 4'-30'.

Recommended spreader material is bagged, free-flowing deicer material or bagged salt.

Standard Features: The spreader shall be equipped with the following standard equipment:

- Low-Profile Hopper Design
- Solid Poly Hopper Cover
- Top Screen with Bag Splitter
- Slide-In Attachment
- Vibrator kit.
- RT3 Attachment Kit
- Material Saver System

Warranty

Hopper spreader has a two-year parts and flat rate labor warranty against defects in material or workmanship.

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Installation

The spreader manufacturer is required to supply with each piece of equipment, a full set of installation instructions. The awarded vendor shall install spreader per the manufacturer's instructions as supplied with bid. Bid price shall include all cost for installation and all vehicle modifications. The electronic controls for the spreaders must be wired thru a "key on hot" ignition source provided by the truck manufacturer. An electronic connection added to the truck's electrical system by the vendor is not acceptable.

Parts & Service

Manufacturer's franchised authorized dealer must have parts and service facility within four (4) hours of F.O.B. delivery location. The supplier of the spreader is required to have a minimum of two (2) associates, who have completed certification training of the systems being provided, residing in the state of Tennessee. Each associate must have a minimum of four (4) years working experience in the spreader equipment industry. They must also have completed certification training of the systems being provided to the state of Tennessee. The two associates will provide statewide training, and they shall also provide troubleshooting and warranty repairs for the spreaders currently being bid. **Failure to provide the associates located in Tennessee and Manufacturer Component Certification will be considered failure to meet specifications. (Note: Manufacture certification as just an installer is not acceptable, troubleshooting, repairs, training capability and experience are required for all components that are in this bid specification).** Franchised dealer address information must be attached to ITB and is a requirement for award. This must be a full service franchised dealership which includes; field representatives, manufacturer's required specialized tools, fully equipped service trucks, factory trained technicians. A list of three (3) satisfied customers using snow plows of the size and type bid and which have been installed and serviced by the manufacturer's franchised authorized service dealer listed below is required. List of customers must include franchise brand bid and model number of equipment.

Manuals

Manuals (printed or electronic) shall be provided with each unit and shall consist of complete electrical and hydraulic schematic drawings, replaceable parts list including brand names and part numbers of the snow plows and spreaders.

Acceptable Brands: Boss, Western Or Equal

SALT SPREADER SPECIFICATIONS

Specifications for Spreaders, Electric, 1.8-2.0 Cubic Yard (Item ID1000176366)

Hopper Construction

The hopper shall be 38" in height, 48 ¼" in width and 96" in length.

The hopper shall be constructed of 3/16" double wall LLDPE polyethylene.

The hopper is mounted to a 304 stainless steel trough. Overall spreader length with chute attached is 93 ½".

The hopper is designed to fit ½ -¾-1 ton trucks with minimum 6'6" beds.

Hopper capacity minimum shall be 1.8 yards.

Complete spreader weight is 600 lbs.

Electrical/Control System

Power for the spreader comes directly from the vehicle battery.

The truck electrical system shall be protected by a 150-amp fuse located near the battery.

The feed motor shall be a minimum, 3/4 HP, sealed, stainless steel high torque, motor.

The spinner motor shall be a 1/8 HP gear motor located above the spinner.

The controller shall have an LCD display with separate variable speed functions for feed and spinner.

The control shall have separate variable speed functions for the vibrators.

Two-55 watt halogen work lights mounted on the rear of the spreader shall have variable output feature through the controller.

Feed System

Material shall be delivered by a planetary gearbox connected to a 6" OD X 9" pitch full length auger.

An inverted V shall be located above the auger. An adjustable deflector shall be located around the spinner. Spinner is 14.5" diameter flexible poly.

Spinner height shall be fully adjustable by sliding mechanism on the chute.

Maximum feed rate is 2.3 cu. ft. per minute.

Spreading width shall be 2'-40' depending on material and moisture content.

Standard Features The spreader shall be equipped with the following standard equipment:

Top Screen – hinged in the center

18 oz. VCP tarp with integral tie downs

Dual Work Lights

Inverted V Baffle

Dual Vibrators

Fully Adjustable Chute/Spinner

LED CHMSL

Hopper Tie Down Kit

SALT SPREADER SPECIFICATIONS

Warranty

Hopper spreader has a two-year parts and flat rate labor warranty against defects in material or workmanship.

Installation

The spreader manufacturer is required to supply with each piece of equipment, a full set of installation instructions. The awarded vendor shall install spreader per the manufacturer's instructions as supplied with bid. Bid price shall include all cost for installation and all vehicle modifications. The electronic controls for the spreaders must be wired thru a "key on hot" ignition source provided by the truck manufacturer. An electronic connection added to the truck's electrical system by the vendor is not acceptable.

Parts & Service

Manufacturer's franchised authorized dealer must have parts and service facility within four (4) hours of F.O.B. delivery location. The supplier of the spreader is required to have a minimum of two (2) associates, who have completed certification training of the systems being provided, residing in the state of Tennessee. Each associate must have a minimum of four (4) years working experience in the spreader equipment industry. They must also have completed certification training of the systems being provided to the state of Tennessee. The two associates will provide statewide training, and they shall also provide troubleshooting and warranty repairs for the spreaders currently being bid. **Failure to provide the associates located in Tennessee and Manufacturer Component Certification will be considered failure to meet specifications. (Note: Manufacture certification as just an installer is not acceptable, troubleshooting, repairs, training capability and experience are required for all components that are in this bid specification).** Franchised dealer address information must be attached to ITB and is a requirement for award. This must be a full service franchised dealership which includes; field representatives, manufacturer's required specialized tools, fully equipped service trucks, factory trained technicians. A list of three (3) satisfied customers using snow plows of the size and type bid and which have been installed and serviced by the manufacturer's franchised authorized service dealer listed below is required. List of customers must include franchise brand bid and model number of equipment.

Manuals

Manuals (printed or electronic) shall be provided with each unit and shall consist of complete electrical and hydraulic schematic drawings, replaceable parts list including brand names and part numbers of the snow plows and spreaders.

Acceptable Brands: Boss, Western Or Equal

SALT SPREADER SPECIFICATIONS

Specifications for Spreaders, Electric, 2.5 - 3.0 Cubic Yard (Item ID1000176367)

Hopper Construction

The hopper shall be 38" in height, 48 ¼" in width and 107" in length.

The hopper shall be constructed of 3/16" double wall LLDPE polyethylene.

The hopper is mounted to a 304 stainless steel trough. Overall spreader length with chute attached is 93 ½".

The hopper is designed to fit ½ -¾-1 ton trucks with minimum 6'6" beds.

Hopper capacity minimum shall be 2.5 cubic yards.

Complete spreader weight is 700 lbs.

Electrical/Control System

Power for the spreader comes directly from the vehicle battery.

The truck electrical system shall be protected by a 150-amp fuse located near the battery.

The feed motor shall be a minimum, 3/4 HP, sealed, stainless steel high torque, motor.

The spinner motor shall be a 1/8 HP gear motor located above the spinner.

The controller shall have an LCD display with separate variable speed functions for feed and spinner.

The control shall have separate variable speed functions for the vibrators.

Two-55 watt halogen work lights mounted on the rear of the spreader shall have variable output feature through the controller.

Feed System

Material shall be delivered by a planetary gearbox connected to a 6" OD X 9" pitch full length auger.

An inverted V shall be located above the auger. An adjustable deflector shall be located around the spinner. Spinner is 14.5" diameter flexible poly.

Spinner height shall be fully adjustable by sliding mechanism on the chute.

Maximum feed rate is 2.3 cu. ft. per minute.

Spreading width shall be 2'-40' depending on material and moisture content.

Standard Features The spreader shall be equipped with the following standard equipment:

Top Screen – hinged in the center

18 oz. VCP tarp with integral tie downs

Dual Work Lights

Inverted V Baffle

Dual Vibrators

Fully Adjustable Chute/Spinner

LED CHMSL

Hopper Tie Down Kit

SALT SPREADER SPECIFICATIONS

Warranty

Hopper spreader has a two-year parts and flat rate labor warranty against defects in material or workmanship.

Installation

The spreader manufacturer is required to supply with each piece of equipment, a full set of installation instructions. The awarded vendor shall install spreader per the manufacturer's instructions as supplied with bid. Bid price shall include all cost for installation and all vehicle modifications. The electronic controls for the spreaders must be wired thru a "key on hot" ignition source provided by the truck manufacturer. An electronic connection added to the truck's electrical system by the vendor is not acceptable.

Parts & Service

Manufacturer's franchised authorized dealer must have parts and service facility within four (4) hours of F.O.B. delivery location. The supplier of the spreader is required to have a minimum of two (2) associates, who have completed certification training of the systems being provided, residing in the state of Tennessee. Each associate must have a minimum of four (4) years working experience in the spreader equipment industry. They must also have completed certification training of the systems being provided to the state of Tennessee. The two associates will provide statewide training, and they shall also provide troubleshooting and warranty repairs for the spreaders currently being bid. **Failure to provide the associates located in Tennessee and Manufacturer Component Certification will be considered failure to meet specifications. (Note: Manufacture certification as just an installer is not acceptable, troubleshooting, repairs, training capability and experience are required for all components that are in this bid specification).** Franchised dealer address information must be attached to ITB and is a requirement for award. This must be a full-service franchised dealership which includes; field representatives, manufacturer's required specialized tools, fully equipped service trucks, factory trained technicians. A list of three (3) satisfied customers using snow plows of the size and type bid and which have been installed and serviced by the manufacturer's franchised authorized service dealer listed below is required. List of customers must include franchise brand bid and model number of equipment.

Manuals

Manuals (printed or electronic) shall be provided with each unit and shall consist of complete electrical and hydraulic schematic drawings, replaceable parts list including brand names and part numbers of the snow plows and spreaders.

Acceptable Brands: Boss, Western or Equal

DUAL AUGER 15 FT. MATERIAL SPREADER (Item 1000186913)

The following specifications are for a dual auger material spreader. There are two spreader designs that are acceptable to the state. The first design is a dual auger spreader with integral spreader stand. The second design is a dual auger spreader stand with an independent attached spreader stand.

Design One: Dual Auger Material Spreader with Integral Spreader Stand

1. General Description:

- a. This specification shall describe a v-box material spreader capable of hauling and spreading free flowing granular materials from a width of four (4) to forty (40) feet.
- b. This unit will consist of a hopper, dual auger discharge/feed, spinner disc, power drive, and all components necessary to make a complete operating unit.
- c. Note: Bolt-on spreader stands are not acceptable.
All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- d. All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- e. This unit shall be factory ready to accept or retrofit servo controls.
- f. All stainless steel used in the production of this unit shall be corrosion resistant, non-magnetic stainless steel.
- g. The manufacturing and production of this unit shall be of the best commercial practices and only materials of the finest quality are to be used.
- h. Bidders must submit with their bid complete specifications on the unit they propose to furnish.
- i. Hopper body sides shall be constructed of 304 10-gauge minimum non-magnetic stainless steel. Hopper sides shall be formed of one solid piece.
- j. NO WELD SPLICES ALLOWED.

2. Body:

- a. Construction: 10-gauge, 304 grade stainless steel with a double crimped top edge forming a 2-inch section for greater rigidity.
- b. Hopper body length: 15-feet with 24-inches of longitudinal overhung for unloading material to the spinner assembly.
- c. Outside width: 82-inch maximum
- d. Side height: 50-inch maximum
- e. Capacity: Approximately 8.3 cubic yards water level full.
- f. Body sides: 10-gauge, stainless steel with no less than 45-degree pitch to ensure free flow of material to the auger trough. Body side sheets are to be one piece with no welded splices.
- g. Body ends: 10-gauge, 304 stainless steel.
- h. Body longitudinal: One piece formed hat channel design
- i. Inside weld: Spreader body shall be 100% welded on the inside.
- j. Channel cross sills: Shall be 7-gauge, 304 stainless steel. The cross sills are built into the leg stand. The hopper is then integrally welded to the leg stand frame
- k. Cross supports: Shall be wide enough to allow the hopper box to be mounted on various width truck frames or slide into a dump box

- l. Top: A 4-inch X 6-inch formed non-magnetic stainless-steel bolt in box beam shall be elevated 3-inches above the top edge of the hopper, thus providing a longitudinal brace and hinge point for the top screens.
- m. Channel: There shall be a 4 1/2-inch tall X 1 3/4-inch wide, formed non-magnetic stainless channel welded under the H-beam to each hopper side for additional side support.
- n. Body welding: Body and auger channel shall be electrically welded into a solid unit.
- o. Side supports: There shall be 12-gauge minimum formed non-magnetic stainless-steel side supports that extend the full angle height spaced on 2-foot centers.
- p. Lift hook: A heavy duty non-magnetic stainless-steel lift hook shall be provided at each corner.
- q. Endplate: The rear endplate shall be sloped inward 22 degrees.
- r. Mounting kit: Mounting kit is to include;
 - i. Two (2) ea. 4-inch nylon load straps which will attach to the pockets welded to the spreader hopper. These straps will be secured to the truck body with 4-inch capacity, cargo winches (which are to be welded to the dump body).
 - ii. One (1) ea. 3"X3"X3/8" structural steel angle to run between the left and right-side tailgate latch. The latch bar is to have a 1-1/4-inch round pin stock welded to the latch bar angle and positioned to allow the dump body tailgate locks to latch over the pins in order to hold the spreader securely into the dump body.
 - iii. All stainless-steel joints shall be welded with stainless steel welding wire.
 - iv. All sub-assemblies shall be secured with stainless steel hardware
 - v. A mounting kit shall be provided to safely secure the hopper to the truck.
- s. License plate mounting bracket shall be attached to the rear of the end plate. Bracket to have two (2) pre-punched holes.

3. Auger System:

- a. The dual auger system shall be twin augers 7-inches in diameter running longitudinally with the body, feeding material the full length of the hopper.
- b. The augers shall consist of a 4-inch O.D. steel pipe. The auger shaft shall have nylon bushings inserted in each end. The front bushing shall have an inner diameter to accept a 2-inch O.D. round bar shaft that is to be used to attach the auger to the front bearings. The rear nylon bushing shall have an inner diameter to accept a 2 1/2-inch shaft attached to the rear reducer. Both ends of the augers shall be attached with a 7/8" X 5 1/2" stainless steel bolt and lock nut.
- c. The flitting shall be 3/8" X 2 1/2" wide AR400 Hardox material. The flitting shall have (5) five different pitches so the hopper will unload evenly from the front, middle and rear.
- d. The augers shall be driven by dual 14 H.P. hydraulic motors coupled to the augers thru speed reducing gear boxes having a 3.6:1 gear reduction ratio that will deliver 27,576 in. lbs. of torque to the augers. The motors shall be connected hydraulically in series with return oil out of the motor first in line directed to power the downstream motor.
- e. The coupling shall be equipped with a grease fighting so that the motor spline and coupling can be lubricated.
- f. The idler end of the auger shall be supported by a 4-bolt flange, heavy duty, sealed, self-aligning ball bearing.
- g. This bearing shall be able to be lubricated from the rear of the body.
- h. The idler bearing end plate shall be manufactured from 1/4-inch stainless steel. The auger drive end plates shall be manufactured from 3/8-inch stainless steel.

- i. A height adjustable stainless steel inverted "V" shall be provided to keep material load off the auger for easier auger start-up.
- j. A protective stainless-steel grate shall be placed over the exposed auger outside the hopper.
- k. A closed loop motor sensor is to be installed on the passenger side auger motor. Wiring for the sensor is to be run to the rear of the spreader. This pulse sensing line must be capable of being connected to the chassis mounted pulse sense wiring in order to provide closed loop operation.
- l. The spreader shall be equipped with a safety interlock device to positively prevent power from reaching the auger motor when the auger cover and top screens are opened beyond the normal operation position.
- m. The auger floor shall be manufactured of 3/8-inch UHMW polyurethane. It shall be of a break-formed design and shall be replaceable. The floor shall be supported by a 10-gauge, stainless steel break-formed trough, running the entire length of the spreader hopper and extending 24-inches past the rear of the spreader hopper.

4. Spinner Assembly:

- a. Distributer disc: 18-inch diameter, made of polyurethane.
- b. Mounting: Disc shall be mounted on a steel replaceable hub connected directly to the hydraulic drive motor.
- c. Material shall be guided from the auger trough to the distribution disc by means of a 12-gauge tapered chute. The chute is to be lined on the inside surface with 3/16-inch thick poly sheet, which is attached to the discharge opening of the spreader by means of a single stainless-steel pin. The chute must be adjustable to direct salt flow to front, center and rear of the spinner in order to direct salt to the left or right of spinner center without using any tools.
- d. Spinner frame shall be manufactured of 12-gauge stainless steel and shall include a one piece tapered, 12-gauge stainless steel deflector above the spinner disc. The spinner frame shall include right and left adjustable deflector panels in order to direct salt projected off the spinner to left, center, and right-side discharge patterns.
- e. Spinner shall be mounted independently from the V box. The spinner will be installed into the existing 4-inch receiver tube on the pintle plate of the truck. The insert weldment on the spinner frame is to be 4" round pipe with a 1/4" wall thickness. The insert tube shall include a weld on stop to allow the pipe to line up with the insert hole in the 4" pintle hitch receiver tube as well as two tabs that center the tube into the hitch assembly in order to easily line up the mounting pin.
- f. Spinner shall be capable of being stored on material spreader when not in use and shall not interfere with the loading or unloading of spreader.
- g. A drawing of the entire removable spinner system shall be provided with the bid package.

5. Top Screens:

- a. Top screens shall be constructed of 3/8-inch steel rods welded to form a 3-inch square mesh woven pattern, which is framed by a combination of 3/16" X 1-1/2" flat steel and 3/16" X 1 1/2" cross-locking bars in the center. Spreader top screens are to be hot dipped galvanized to prevent rust and corrosion. Painted top screens are not acceptable.
- b. Top screens shall be removable and use drop-n-loc type hinge. Screens utilizing hardware that may vibrate loose are not acceptable.

6. Painting:

All stainless steel shall be left unpainted. Carbon steel components shall be chemically cleaned, or sand/media blasted and coated with a lead-free rust inhibitive primer and painted with lead free black enamel.

7. Liquid Chemical Storage:

- a. Two (2) side-mounted 225-gallon polyethylene reservoir tanks, one per side shall be provided to allow a total of 450 gallons of liquid capacity.
- b. A 3-inch top fill port with splash proof vent and a 2-inch suction port are to be provided in each tank.
- c. A plumbing/quick fill kit is to be included consisting of:
 - i. Shut-off valves at each tank end
 - ii. Cam lever coupler and all necessary fittings to plumb the tanks together
 - iii. Provisions to fill one tank only or both tanks at the same time.
 - iv. Quick drain valve is to be plumbed into the system on the passenger side. of the vehicle

8. Conspicuity:

Spreader shall be outfitted with DOT-C2 11" red/7" white or 6" red/6" white parabolic retro-reflective conspicuity tape (Reflexite, 3M or equal) as per TDOT guidelines. Layout pattern shall be provided to the successful bidder.

9. Tailgate Standoff:

There shall be tailgate standoff brackets attached to the spreader to hold the raised tailgate off the spreader and spinner chute during spreader operations. Standoffs shall be of a fixed design and shall be made of non-magnetic stainless steel. Standoffs shall not interfere with the operation or the loading or unloading of the spreader assembly. Design must be approved by the state.

10. Ladder:

Stainless steel folding ladder is to be provided and installed on the curb side rear of the spreader hopper. The ladder is to be constructed using 100% non-magnetic stainless-steel material including stainless steel grip punched ladder rungs, vertical bracing and grab handle tubes on each side of the ladder treads and all hardware. The ladder shall provide a three-point contact access to the top screens for cleaning

11. Integral Leg Stands:

Integral to the spreader shall be stainless steel legs. These legs will be built as part of the spreader and completely integral. No bolt on legs will be allowed. Like the spreader the legs will be manufactured using 304 stainless steel. The spreader with integral legs shall be capable of loading in to an 86" wide dump body with a flat floor width of 76". The legs must be capable of lifting above the height of at least 35" above the ground level so as not to interfere with trailer connections and operation.

- a. FRAME: The frame of the spreader shall include two longitudinals fabricated using a one piece formed hat channel design out of 7-gauge 304 stainless steel. The channels should measure 6" inside width and 7.5" tall. On the front end of each longitudinal there shall be a 6" heavy duty poly nylatron wheel. The wheel shall be 4,000lb min rated and all hardware shall be stainless steel. No steel bushings or bearings will be permitted. Between the longitudinals shall be 7 gauge 304 stainless fabricated channels measuring 5" wide and 4" deep.

These crossmembers shall be welded to the bottom of the auger trough along with side gussets.

- b. **REAR LEGS (Discharge end):** The rear upper leg frame shall be 7 gauge 304 stainless steel and located between the main frame rails. The rear legs shall be fabricated using 1/4" 304 stainless steel tube. The stainless tube shall measure 5" X 2-1/2". The rear legs shall be adjustable within the upper leg frame using five (5) adjustment heights. The legs shall be sloped at 15 degrees minimum so the lower part of the leg angles away from the spreader and towards the rear. Leg shall pin to the upper frame using a 1" zinc plated pin with a handle. The feet of each leg shall be pivotable, measuring 10" X 3" and made from 7 gauge 304 stainless steel. Five (5) 1/2" X 2" studs shall be welded to the bottom to reduce slippage.
- c. **FRONT LEGS:** Front legs shall be tube in tube design and slanted forward at an angle of 95 degrees. The upper leg portion shall be 4" X 4" X 7 gauge 304 stainless fabricated square tube with a minimum of three (3) holes for height adjustment. The lower inner legs shall be 3-1/2" X 3-1/2" X 3/16" stainless structural tube. These lower legs shall have six (6) holes for height adjustment. The feet of the lower legs shall each have a pivotable pad measuring 4" X 5" and made of 7 gauge 304 stainless steel. The pin for locking the spreader legs in the storage position shall be a minimum of 1.25".
- d. **LATCH AND ROLLERS:** The spreader/stand assembly shall incorporate a latch bar to allow it to be fastened in to the rear latches of the dump body when loaded. The latch bar materials shall be stainless. The spreader/stand shall also include side mounted guide wheels to assist in loading and unloading the spreader. These wheels will ride along the inside of the dump body and should be adjustable.

OR

DUAL AUGER 15 FT. MATERIAL SPREADER (Item TBD)

Design Two: V-Box Material Spreader with An Independent Attached Leg Stand.

1. General Description:

- a. This specification shall describe a v-box material spreader capable of hauling and spreading free flowing granular materials from a width of four (4) to forty (40) feet.
- b. This unit will consist of a hopper, Dual Auger discharge/feed, spinner disc, power drive, and all components necessary to make a complete operating unit.
- c. All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- d. This unit shall be factory ready to accept or retrofit servo controls.
- e. All stainless steel used in the production of this unit shall be corrosion resistant, non-magnetic stainless steel.
- f. The manufacturing and production of this unit shall be of the best commercial practices and only materials of the finest quality are to be used.
- g. Bidders must submit with their bid complete specifications on the unit they propose to furnish.
- h. Hopper body sides shall be constructed of 201 or 304 10 GA. minimum non-magnetic stainless steel. Hopper sides shall be formed of one solid piece. **NO WELD SPLICES ALLOWED.**

2. Body:

- a. Construction – 10 Ga. 201 or 304 minimum non-magnetic stainless steel with a double crimped top edge forming a 2" section for greater rigidity.

- b. Hopper body Length – 15' with 2' of longitudinal overhung for unloading material to the spinner assembly.
- c. Outside Width – 82" maximum
- d. Side Height – 50" maximum
- e. Capacity – Approximately 8.3 cubic yards water level full
- f. Body sides – 10 ga. Stainless steel with no less than 45 degree pitch to ensure free flow of material to the auger trough.
- g. Body ends – 10 ga. Non-magnetic stainless steel.
- h. Body longitudinal – Shall be manufactured of 10 ga. Non-magnetic stainless steel.
- i. Inside weld – Spreader body shall be 100% welded on the inside.
- j. Channel cross sills – Shall be 7 ga. Non-magnetic stainless steel that tie the lower edge of the longitudinal to each side support.
- k. Cross supports – Shall be wide enough to allow the hopper box to be mounted on various width truck frames or slide into a dump box.
- l. Top – A 4" X 6" formed non-magnetic stainless steel bolt in box beam shall be elevated 3" above the top edge of the hopper, thus providing a longitudinal brace and hinge point for the top screens.
- m. Channel – There shall be a 3" formed non-magnetic stainless channel welded under the H-beam to each hopper side for additional side support.
- n. Body welding – body and auger channel shall be electrically welded into a rugged solid unit
- o. Side supports – There shall be 12 ga minimum formed non-magnetic stainless steel side supports that extend the full angle height spaced on 2' centers.
- p. Lift Hook – A heavy duty non-magnetic stainless steel lift hook shall be provided at each corner.
- q. Endplate – The rear endplate shall be sloped inward 22 degrees.
- r. Mounting kit – Mounting kit is to include;
 - i. 2 ea. 4" nylon load straps which will attach to the pockets welded to the spreader hopper. These straps will be secured to the truck body with 4" capacity, cargo winches (which are to be welded to the dump body).
 - ii. 1 ea. 3" X 3" X 3/8" structural steel angle to run between the left and right side tailgate latch. The latch bar is to have a 1-1/4" round pin stock welded to the latch bar angle and positioned to allow the dump body tailgate locks to latch over the pins in order to hold the spreader securely into the dump body.
 - iii. All stainless steel joints shall be welded with stainless steel welding wire.
 - iv. All sub-assemblies shall be secured with stainless steel hardware
 - v. A mounting kit shall be provided to safely secure the hopper to the truck.

3. Auger System:

- a. The dual auger system shall be twin augers 7" in diameter running longitudinally with the body, feeding material the full length of the hopper.
- b. The augers shall consist of a 4" O.D. steel pipe with a 2" steel end shaft and steel fitting continuously welded the full length.
- c. The fliting shall be 1/2" thick steel. The fliting shall have (3) different pitches so the hopper will unload evenly from the front, middle and rear. Outer edge of fliting shall include welded steel hardened matrix.
- d. The augers shall be driven by dual 18 H.P. hydraulic motors directly coupled by a spline shaft coupling.
- e. The coupling shall be equipped with a grease fitting so that the motor spline and coupling can be lubricated.
- f. The idler end of the auger shall be supported by a 4 bolt flange, heavy duty, dust sealed, self-aligning ball bearing.
- g. This bearing shall be able to be lubricated from the rear of the body.
- h. Both the auger drive and idler end plate shall be manufactured from 3/16" Stainless steel.
- i. A height adjustable stainless steel inverted vee shall be provided to keep material load off the auger for easier auger start-up.

- j. A protective stainless steel grate shall be placed over the exposed auger outside the hopper.
- k. A closed loop auger sensor is to be installed on the passenger side auger shaft at the front of the spreader. Wiring for the sensor is to be run to the rear of the spreader. This pulse sensing line must be capable of being connected to the chassis mounted pulse sense wiring in order to provide closed loop operation.
- l. The spreader shall be equipped with a safety interlock device to positively prevent power from reaching the auger motor when the auger cover and top screens are opened beyond the normal operation position.
- m. The augers shall be driven by dual 18 H.P. hydraulic motors directly coupled to the augers by a spline shaft coupling. The motors shall be connected hydraulically in series with return oil out of the motor first in line directed to power the downstream motor.
- n. The auger floor shall be manufactured of $\frac{3}{4}$ " UHMW polyurethane. It shall be of a curved design and shall be replaceable. The floor shall be supported on 12 gauge stainless steel cross angles spaced approximately 12" apart.

4. Spinner Assembly:

- a. Distributer disc – 18" diameter, made of polyurethane.
- b. Mounting – Disc shall be mounted on a steel replaceable hub connected directly to the hydraulic drive motor
- c. Material shall be guided from the Auger trough to the distribution disc by means of a 12 Ga. tapered chute. The chute is to be lined on the inside surface with $\frac{3}{16}$ " thick poly sheet, which is attached to the discharge opening of the spreader by means of a single stainless steel pin. The chute must be adjustable to direct salt flow to front, center and rear of the spinner in order to direct salt to the left or right of spinner center without using any tools.
- d. Spinner frame shall be manufactured of 12 ga. stainless steel and shall include a one piece tapered, 12 Ga. Stainless steel deflector above the spinner disk. The spinner frame will include right and left adjustable deflector panels in order to direct salt projected off the spinner to left of center, center and right side discharge patterns.
- e. Spinner shall be mounted independently from the V box. The spinner will be installed into the existing 4" receiver tube on the Pintle plate. The insert weldment on the spinner frame is to be 4" round pipe with a $\frac{1}{4}$ " wall thickness. The insert tube shall include a weld on stop to allow the pipe to line up with the insert hole in the 4" Pintle hitch receiver tube a truck mounted insert. As well as two "tabs" that center the tube into the hitch assembly in order to easily line up the mounting pin.
- f. Spinner shall be capable of being stored on material spreader when not in use and shall not interfere with the loading or unloading of spreader.
- g. A drawing of the entire removable spinner system is to be provided with the bid package

5. Top Screens:

- a. Top screens shall be constructed of $\frac{3}{8}$ -inch steel rods welded to form a 3-inch square mesh woven pattern, which is framed by a combination of $\frac{3}{16}$ " X 1-1/2" flat steel and $\frac{3}{16}$ " X 1 1/2" cross-locking bars in the center. Spreader top screens are to be hot dipped galvanized to prevent rust and corrosion. Painted top screens are not acceptable.
- b. Top screens shall be removable and use drop-n-loc type hinge. Screens utilizing hardware that may vibrate loose are not acceptable. Top screens shall be constructed of $\frac{3}{8}$ " steel rods welded to form a 2.5" square mesh, which is framed by a combination of $\frac{1}{4}$ " X 1-1/2" flat steel and 2" angle iron with the edge supports reinforced by $\frac{1}{2}$ " X 1" flat bars.

6. **Painting** – All stainless steel shall be left unpainted. Carbon steel components shall be chemically cleaned, or sand/media blasted and coated with a lead free rust inhibitive primer and painted with lead free black enamel.

7. **Liquid Chemical Storage:**

- a. Two side mounted 225 gallon polyethylene reservoir tanks, one per side shall be provided to allow a total of 450 gallons of liquid capacity.
- b. A 3" top fill port with splash proof (dual direction) vent and a 2" suction port are to be provided in each tank.
- c. A plumbing/quick fill kit is to be included consisting of:
 - i. Shut-off valves at each tank end
 - ii. Cam lever coupler and all necessary fittings to plumb the tanks together
 - iii. Provisions to fill one tank only or both tanks at the same time.
 - iv. Quick drain valve is to be plumbed into the system on the passenger side of the vehicle.

8. **Conspicuity** – Spreader shall be outfitted with DOT-C2 11" red/7" white or 6" red/6" white parabolic retro-reflective conspicuity tape (Reflexite, 3M or equal) as per TDOT guidelines. Layout pattern shall be provided to the successful bidder.

9. **Tailgate Standoff:**

There shall be tailgate standoff brackets attached to the spreader to hold the raised tailgate off the spreader and spinner chute during spreader operations. Standoffs shall be of a fixed design and shall be made of non-magnetic stainless steel. Standoffs shall not interfere with the operation or the loading or unloading of the spreader assembly. Design must be approved by the state.

10. **Ladder**

Stainless steel folding ladder is to be provided and installed on the curb side rear of the spreader hopper. The ladder is to be constructed using 100% non-magnetic stainless steel material including stainless steel grip punched ladder rungs, vertical bracing and grab handle tubes on each side of the ladder treads and all hardware. The ladder shall provide a three point contact access to the top screens for cleaning

11. **Leg Stand Frame:**

Leg stand frame and legs shall be hot dipped galvanized **OR** stainless steel. Leg stand shall be constructed using 3" X 3" X 3/16" tubing which form four long-members running the length of the stand that support the V box. The front of the stand assembly includes two folding and self-storing 3" X 3" tubular legs which will support the empty weight of the spreader when it has been removed from the dump body. Front legs are to have a minimum of three grease zerks to lubricate the inner tube on which the leg assembly rotates.

The stand shall be equipped with holes spaced on 24" centers for mounting to v-box spreader.

Entire leg-stand frame shall be welded solid where possible.

Legs:

Rear spreader legs are constructed using 3 1/2" X 3 1/2" X 1/4" tubing. The legs must be capable of lifting above the height of at least 35" above the ground level so as not to interfere with trailer connections and operation.

Front legs shall be designed to lock at an angle of 90 degrees down in relation to the frame rails for storage, and shall also be designed to swing up, nest between frame rails, and lock for installation into the dump body.

Left and right front upper legs shall be connected by a cross tube constructed from formed 7 gauge steel. Front legs to be bolted to the cross tube.

Left and Right front legs shall be equipped with 1/2" diameter spring loaded pins to lock the legs in the standing and folded positions.

Front upper legs shall be equipped with 5/8" diameter spring-loaded pins to lock lower leg into the desired height.

The spreader stand shall include a guide plate system to assist in loading the spreader into the truck body.

Guide plates are to be constructed using 1/2" thick stainless steel plates which are tapered to guide the spreader into the correct position inside the body and must be designed to position the spreader in the center of the body and thus protect the liquid tanks from damage if the spreader is not properly positioned when loading the unit has begun.

OR

Leg Stand Assembly

Leg stand assembly shall be hot dipped galvanized **or** stainless steel.

Spreader shall come equipped with a storage stand system designed to be bolted directly to the v-box.

Skid type arrangement shall be constructed entirely of structural tubing.

Main frame shall be constructed of 3" X 4" X 1/4" tubing.

There shall be sufficient lateral bracing constructed of 1-1/2" X 3" X 3/16" tubing to support the hopper.

There shall be longitudinal supports constructed of 1-1/2" X 3" X 3/16" tubing with holes spaced on 24" centers for mounting to hoppers.

The forward leg shall be constructed of 3-1/2" X 3-1/2" X 3/16" tubing and shall be adjustable in height and designed to fold up as the vehicle backs underneath the stand.

Cast iron caster wheels with greaseable steel ball bearings shall be mounted at the front of the main frame to allow the unit to roll into the vehicle.

Rear legs shall be of a self-storing telescopic design. (rear legs must be capable of lifting above the height of 35" above ground level so as not to interfere with trailer connections and operation)

Lower leg shall be constructed of 3-1/2" X 3-1/2" X 3/16" tubing and shall telescope inside the upper leg that is constructed of 4" X 4" X 3/16" tubing for storage.

Lower rear legs shall be equipped with a swivel mounted foot to provide additional stability during loading and unloading operations.

Guide plates are to be constructed using 1/2" thick plate steel **or** stainless steel plates which are tapered to guide the spreader into the correct position inside the

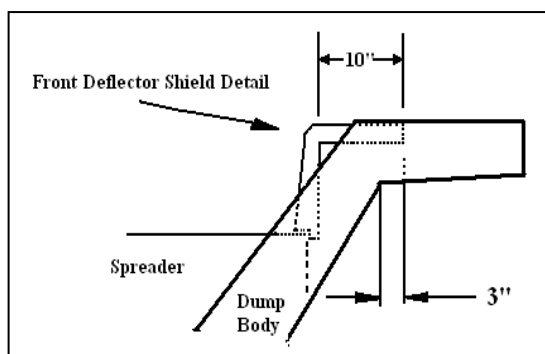
body and must be designed to position the spreader in the center of the body and thus protect

12. Salt Spreader Material Deflector System

All V-Box slide-in material spreaders are to be delivered, equipped with the following material deflector system installed on the spreader.

- d. Spreader is to be equipped with a front deflector shield and be constructed from 10 Ga., 201 non-magnetic stainless steel.
- e. Front deflector is to be welded to the front wall of the spreader body on an angle so as to be self-cleaning, and properly braced to carry the weight of salt that may not fall into the top of the spreader while loading.
- f. Front deflector shield is to extend forward a minimum of 10" in front on the spreader head sheet and must also be long enough to extend over the dump body cab shield a minimum of three inches.

Acceptable V-box brands: Viking, Flink, or equal.



DUAL AUGER 19 FT. MATERIAL SPREADER (Item 1000186914)

The following specifications are for a dual auger material spreader. There are two spreader designs that are acceptable to the state. The first design is a dual auger spreader with integral spreader stand. The second design is a dual auger spreader stand with an independent attached spreader stand.

Design One: Dual Auger Material Spreader with Integral Spreader Stand

1. General Description:

- a. This specification shall describe a v-box material spreader capable of hauling and spreading free flowing granular materials from a width of four (4) to forty (40) feet.
- b. This unit will consist of a hopper, dual auger discharge/feed, spinner disc, power drive, and all components necessary to make a complete operating unit.
- c. Note: Bolt-on spreader stands are not acceptable.
All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and

- unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- d. All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- e. This unit shall be factory ready to accept or retrofit servo controls.
- j. All stainless steel used in the production of this unit shall be corrosion resistant, non-magnetic stainless steel.
- k. The manufacturing and production of this unit shall be of the best commercial practices and only materials of the finest quality are to be used.
- l. Bidders must submit with their bid complete specifications on the unit they propose to furnish.
- m. Hopper body sides shall be constructed of 304 10 gauge minimum non-magnetic stainless steel. Hopper sides shall be formed of one solid piece.
- j. NO WELD SPLICES ALLOWED.

1. Body:

- a. Construction: 10 gauge, 304 grade stainless steel with a double crimped top edge forming a 2-inch section for greater rigidity.
- b. Hopper body length: 19-feet with 24-inches of longitudinal overhung for unloading material to the spinner assembly.
- c. Outside width: 82-inch maximum
- d. Side height: 50-inch maximum
- e. Capacity: Approximately 14.10 cubic yards water level full.
- f. Body sides: 10 gauge, stainless steel with no less than 45 degree pitch to ensure free flow of material to the auger trough. Body side sheets are to be one piece with no welded splices.
- g. Body ends: 10 gauge, 304 stainless steel.
- h. Body longitudinal: One piece formed hat channel design
- i. Inside weld: Spreader body shall be 100% welded on the inside.
- j. Channel cross sills: Shall be 7 gauge, 304 stainless steel. The cross sills are built into the leg stand. The hopper is then integrally welded to the leg stand frame
- k. Cross supports: Shall be wide enough to allow the hopper box to be mounted on various width truck frames or slide into a dump box
- l. Top: A 4-inch X 6-inch formed non-magnetic stainless steel bolt in box beam shall be elevated 3-inches above the top edge of the hopper, thus providing a longitudinal brace and hinge point for the top screens.
- m. Channel: There shall be a 4 1/2-inch tall X 1 3/4-inch wide, formed non-magnetic stainless channel welded under the H-beam to each hopper side for additional side support.
- n. Body welding: Body and auger channel shall be electrically welded into a rugged solid unit.
- o. Side supports: There shall be 12 gauge minimum formed non-magnetic stainless steel side supports that extend the full angle height spaced on 2-foot centers.
- p. Lift hook: A heavy duty non-magnetic stainless steel lift hook shall be provided at each corner.
- q. Endplate: The rear endplate shall be sloped inward 22 degrees.
- r. Mounting kit: Mounting kit is to include;
 - i. Four (4) ea. 4-inch nylon load straps which will attach to the pockets welded to the spreader hopper. These straps will be secured to the truck body with 4-inch capacity, cargo winches (which are to be welded to the dump body).
 - ii. One (1) ea. 3"X3"X3/8" structural steel angle to run between the left and right side tailgate latch. The latch bar is to have a 1-1/4-inch round pin

stock welded to the latch bar angle and positioned to allow the dump body tailgate locks to latch over the pins in order to hold the spreader securely into the dump body.

- iii. All stainless steel joints shall be welded with stainless steel welding wire.
- iv. All sub-assemblies shall be secured with stainless steel hardware
- v. A mounting kit shall be provided to safely secure the hopper to the truck.
- s. License plate mounting bracket shall be attached to the rear of the end plate. Bracket to have two (2) pre-punched holes.

3. Auger System:

- a. The dual auger system shall be twin augers 7-inches in diameter running longitudinally with the body, feeding material the full length of the hopper.
- b. The augers shall consist of a 4-inch O.D. steel pipe. The auger shaft shall have nylon bushings inserted in each end. The front bushing shall have an inner diameter to accept a 2-inch O.D. round bar shaft that is to be used to attach the auger to the front bearings. The rear nylon bushing shall have an inner diameter to accept a 2 1/2-inch shaft attached to the rear reducer. Both ends of the augers shall be attached with a 7/8" X 5 1/2" stainless steel bolt and lock nut.
- c. The flitting shall be 3/8" X 2 1/2" wide AR400 Hardox material. The flitting shall have (5) five different pitches so the hopper will unload evenly from the front, middle and rear.
- d. The augers shall be driven by dual 14 H.P. hydraulic motors coupled to the augers thru speed reducing gear boxes having a 3.6:1 gear reduction ratio that will deliver 27,576 in. lbs. of torque to the augers. The motors shall be connected hydraulically in series with return oil out of the motor first in line directed to power the downstream motor.
- e. The coupling shall be equipped with a grease fitting so that the motor spline and coupling can be lubricated.
- f. The idler end of the auger shall be supported by a 4 bolt flange, heavy duty, dust sealed, self-aligning ball bearing.
- g. This bearing shall be able to be lubricated from the rear of the body.
- h. The idler bearing end plate shall be manufactured from 1/4-inch stainless steel. The auger drive end plates shall be manufactured from 3/8-inch stainless steel.
- i. A height adjustable stainless steel inverted "V" shall be provided to keep material load off the auger for easier auger start-up.
- j. A protective stainless steel grate shall be placed over the exposed auger outside the hopper.
- k. A closed loop motor sensor is to be installed on the passenger side auger motor. Wiring for the sensor is to be run to the rear of the spreader. This pulse sensing line must be capable of being connected to the chassis mounted pulse sense wiring in order to provide closed loop operation.
- l. The spreader shall be equipped with a safety interlock device to positively prevent power from reaching the auger motor when the auger cover and top screens are opened beyond the normal operation position.
- m. The auger floor shall be manufactured of 3/8-inch UHMW polyurethane. It shall be of a break-formed design and shall be replaceable. The floor shall be supported by a 10 gauge, stainless steel break-formed trough, running the entire length of the spreader hopper and extending 24-inches past the rear of the spreader hopper.

4. Spinner Assembly:

- a. Distributer disc: 18 inch diameter, made of polyurethane.
 - b. Mounting: Disc shall be mounted on a steel replaceable hub connected directly to the hydraulic drive motor.
 - c. Material shall be guided from the auger trough to the distribution disc by means of a 12 gauge tapered chute. The chute is to be lined on the inside surface with 3/16-inch thick poly sheet, which is attached to the discharge opening of the spreader by means of a single stainless steel pin. The chute must be adjustable to direct salt flow to front, center and rear of the spinner in order to direct salt to the salt to the left or right of spinner center without using any tools
 - d. Spinner frame shall be manufactured of 12 gauge stainless steel and shall include a one piece tapered, 12 gauge stainless steel deflector above the spinner disc. The spinner frame shall include right and left adjustable deflector panels in order to direct salt projected off the spinner to left, center, and right side discharge patterns.
 - e. Spinner shall be mounted independently from the V box. The spinner will be installed into the existing 4-inch receiver tube on the pintle plate of the truck. The insert weldment on the spinner frame is to be 4" round pip with a 1/4" wall thickness. The insert tube shall include a weld on stop to allow the pipe to line up with the insert hole in the 4" pintle hitch receiver tube as well as two tabs that center the tube into the hitch assembly in order to easily line up the mounting pin.
 - f. Spinner shall be capable of being stored on material spreader when not in use and shall not interfere with the loading or unloading of spreader.
 - g. A drawing of the entire removable spinner system shall be provided with the bid package.
5. Top Screens:
- a. Top screens shall be constructed of 3/8-inch steel rods welded to form a 3-inch square mesh woven pattern, which is framed by a combination of 3/16" X 1-1/2" flat steel and 3/16" X 1 1/2" cross-locking bars in the center. Spreader top screens are to be hot dipped galvanized to prevent rust and corrosion. Painted top screens are not acceptable.
 - b. Top screens shall be removable and use drop-n-loc type hinge. Screens utilizing hardware that may vibrate loose are not acceptable.
6. Painting:
- All stainless steel shall be left unpainted. Carbon steel components shall be chemically cleaned, or sand/media blasted and coated with a lead free rust inhibitive primer and painted with lead free black enamel.
7. Liquid Chemical Storage:
- a. Two (2) side-mounted 225 gallon polyethylene reservoir tanks, one per side shall be provided to allow a total of 450 gallons of liquid capacity.
 - b. A 3-inch top fill port with splash proof vent and a 2-inch suction port are to be provided in each tank.
 - c. A plumbing/quick fill kit is to be included consisting of:
 - i. Shut-off valves at each tank end
 - ii. Banjo coupler and all necessary fittings to plumb the tanks together
 - iii. Provisions to fill one tank only or both tanks at the same time.
 - iv. Quick drain valve is to be plumbed into the system on the passenger side of the vehicle.
8. Conspicuity:

Spreader shall be outfitted with DOT-C2 11" red/7" white or 6" red/6" white parabolic retro-reflective conspicuity tape (Reflexite, 3M or equal) as per TDOT guidelines. Layout pattern shall be provided to the successful bidder.

9. Tailgate Standoff:

There shall be tailgate standoff brackets attached to the spreader to hold the raised tailgate off the spreader and spinner chute during spreader operations. Standoffs shall be of a fixed design and shall be made of non-magnetic stainless steel. Standoffs shall not interfere with the operation or the loading or unloading of the spreader assembly. Design must be approved by TDOT.

10. Ladder:

Stainless steel folding ladder is to be provided and installed on the curb side rear of the spreader hopper. The ladder is to be constructed using 100% non-magnetic stainless steel material including stainless steel grip punched ladder rungs, vertical bracing and grab handle tubes on each side of the ladder treads and all hardware. The ladder shall provide a "three" point access to the top screens for cleaning

11. Integral Leg Stands:

Integral to the spreader shall be stainless steel legs. These legs will be built as part of the spreader and completely integral. No bolt on legs will be allowed. Like the spreader the legs will be manufactured using 304 stainless steel. The spreader with integral legs shall be capable of loading in to an 86" wide dump body with a flat floor width of 76".

- a. FRAME: The frame of the spreader shall include two longitudinals fabricated using a one piece formed hat channel design out of 7 gauge 304 stainless steel. The channels should measure 6" inside width and 7.5" tall. On the front end of each longitudinal there shall be a 6" heavy duty poly nylatron wheel. The wheel shall be 4,000lb min rated and all hardware shall be stainless steel. No steel bushings or bearings will be permitted. Between the longitudinals shall be 7 gauge 304 stainless fabricated channels measuring 5" wide and 4" deep. These crossmembers shall be welded to the bottom of the auger trough along with side gussets.
- b. REAR LEGS: The rear upper leg frame shall be 7 gauge 304 stainless steel and located between the main frame rails. The rear legs shall be fabricated using 1/4" 304 stainless steel tube. The stainless tube shall measure 5" X 2-1/2". The rear legs shall be adjustable within the upper leg frame using five (5) adjustment heights. The legs shall be sloped at 15 degrees minimum so the lower part of the leg angles away from the spreader and towards the rear. Leg shall pin to the upper frame using a 1" zinc plated pin with a handle. The feet of each leg shall be pivotable, measuring 10" X 3" and made from 7 gauge 304 stainless steel. Five (5) 1/2" X 2" studs shall be welded to the bottom to reduce slippage.
- c. FRONT LEGS: Front legs shall be tube in tube design and slanted forward at an angle of 95 degrees. The upper leg portion shall be 4" X 4" X 7 gauge 304 stainless fabricated square tube with a minimum of three (3) holes for height adjustment. The lower inner legs shall be 3-1/2" X 3-1/2" X 3/16" stainless structural tube. These lower legs shall have six (6) holes for height adjustment. The feet of the lower legs shall each have a pivotable pad measuring 4" X 5" and made of 7 gauge 304 stainless steel. The pin for locking the spreader legs in the storage position shall be a minimum of 1.25".
- d. LATCH AND ROLLERS: The spreader/stand assembly shall incorporate a latch bar to allow it to be fastened in to the rear latches of the dump body when loaded. The latch bar materials shall be stainless. The spreader/stand shall

also include side mounted guide wheels to assist in loading and unloading the spreader. These wheels will ride along the inside of the dump body and should be adjustable.

OR

DUAL AUGER 19 FT. MATERIAL SPREADER (Item TBD)

Design Two: V-Box Material Spreader with An Independent Attached Leg Stand.

10. General Description:

- a. This specification shall describe a v-box material spreader capable of hauling and spreading free flowing granular materials from a width of four (4) to forty (40) feet.
- b. This unit will consist of a hopper, Dual Auger discharge/feed, spinner disc, power drive, and all components necessary to make a complete operating unit.
- c. All bidders shall provide a complete proposal drawing accurately showing the exact model to be provided including all options, and units, loaded and unloaded weights and centers of gravity. These drawings shall be provided as part of the bid package.
- d. This unit shall be factory ready to accept or retrofit servo controls.
- e. All stainless steel used in the production of this unit shall be corrosion resistant, non-magnetic stainless steel.
- f. The manufacturing and production of this unit shall be of the best commercial practices and only materials of the finest quality are to be used.
- g. Bidders must submit with their bid complete specifications on the unit they propose to furnish.
- h. Hopper body sides shall be constructed of 201 or 304 10 GA. minimum non-magnetic stainless steel. Hopper sides shall be formed of one solid piece. **NO WELD SPLICES ALLOWED.**

11. Body:

- a. Construction - 10 Ga. 201 or 304 minimum non-magnetic stainless steel with a double crimped top edge forming a 2" section for greater rigidity.
- b. Hopper body Length – 19' with 2' of longitudinal overhung for unloading material to the spinner assembly.
- c. Outside Width – 82" maximum
- d. Side Height – 62" maximum
- e. Capacity – Approximately 14.10 cubic yards water level full
- f. Body sides – 10 ga. Stainless steel with no less than 45 degree pitch to ensure free flow of material to the auger trough.
- g. Body ends – 10 ga. non-magnetic stainless steel.
- h. Body longitudinal – Shall be manufactured of 10 ga. Non-magnetic stainless steel.
- i. Inside weld – Spreader body shall be 100% welded on the inside.
- j. Channel cross sills – Shall be 7 ga. Non-magnetic stainless steel that tie the lower edge of the longitudinal to each side support.
- k. Cross supports – Shall be wide enough to allow the hopper box to be mounted on various width truck frames or slide into a dump box.
- l. Top – A 4" X 6" formed non-magnetic stainless steel bolt in box beam shall be elevated 3" above the top edge of the hopper, thus providing a longitudinal brace and hinge point for the top screens.
- m. Channel – There shall be a 3" formed non-magnetic stainless channel welded under the H-beam to each hopper side for additional side support.
- n. Body welding – body and auger channel shall be electrically welded into a rugged solid unit
- o. Side supports – There shall be 12 ga minimum formed non-magnetic stainless steel side supports that extend the full angle height spaced on 2' centers.
- p. Lift Hook – A heavy duty non-magnetic stainless steel lift hook shall be provided at each corner.

- q. Endplate – The rear endplate shall be sloped inward 22 degrees.
- r. Mounting kit – Mounting kit is to include;
 - i. 4 ea. 4" nylon load straps which will attach to the pockets welded to the spreader hopper. These straps will be secured to the truck body with 4" capacity, cargo winches (which are to be welded to the dump body).
 - ii. 1 ea. 3" X 3" X 3/8" structural steel angle to run between the left and right side tailgate latch. The latch bar is to have a 1-1/4" round pin stock welded to the latch bar angle and positioned to allow the dump body tailgate locks to latch over the pins in order to hold the spreader securely into the dump body.
 - iii. All stainless steel joints shall be welded with stainless steel welding wire.
 - iv. All sub-assemblies shall be secured with stainless steel hardware
 - v. A mounting kit shall be provided to safely secure the hopper to the truck.

12. Auger System:

- o. The dual auger system shall be twin augers 9" in diameter running longitudinally with the body, feeding material the full length of the hopper.
- p. The augers shall consist of 3 1/2 inch SCH 80 steel pipe with a 2" steel end shaft and steel fitting continuously welded the full length.
- q. The fluting shall be 3/8 x 2 1/2 inch AR400. The fluting shall have (3) different pitches so the hopper will unload evenly from the front, middle and rear. Outer edge of fluting shall include welded steel hardened matrix.
- r. The augers shall be driven by dual 18 H.P. hydraulic motors directly coupled by a spline shaft coupling.
- s. The coupling shall be equipped with a grease fitting so that the motor spline and coupling can be lubricated.
- t. The idler end of the auger shall be supported by a 4 bolt flange, heavy duty, dust sealed, self-aligning ball bearing.
- u. This bearing shall be able to be lubricated from the rear of the body.
- v. Both the auger drive and idler end plate shall be manufactured from 3/16" Stainless steel.
- w. A height adjustable stainless steel inverted vee shall be provided to keep material load off the auger for easier auger start-up.
- x. A protective stainless steel grate shall be placed over the exposed auger outside the hopper.
- y. A closed loop auger sensor is to be installed on the passenger side auger shaft at the front of the spreader. Wiring for the sensor is to be run to the rear of the spreader. This pulse sensing line must be capable of being connected to the chassis mounted pulse sense wiring in order to provide closed loop operation.
- z. The spreader shall be equipped with a safety interlock device to positively prevent power from reaching the auger motor when the auger cover and top screens are opened beyond the normal operation position.
- aa. The augers shall be driven by dual 18 H.P. hydraulic motors directly coupled to the augers by a spline shaft coupling. The motors shall be connected hydraulically in series with return oil out of the motor first in line directed to power the downstream motor.
- bb. The auger floor shall be manufactured of 3/4" UHMW polyurethane. It shall be of a curved design and shall be replaceable. The floor shall be supported on 12 gauge stainless steel cross angles spaced approximately 12" apart.

13. Spinner Assembly:

- a. Distributer disc – 18" diameter, made of polyurethane.
- b. Mounting – Disc shall be mounted on a steel replaceable hub connected directly to the hydraulic drive motor
- c. Material shall be guided from the Auger trough to the distribution disc by means of a 12 Ga. tapered chute. The chute is to be lined on the inside surface with 3/16" thick poly sheet, which is attached to the discharge

opening of the spreader by means of a single stainless steel pin. The chute must be adjustable to direct salt flow to front, center and rear of the spinner in order to direct salt to the left or right of spinner center without using any tools.

- d. Spinner frame shall be manufactured of 12 ga. stainless steel and shall include a one piece tapered, 12 Ga. Stainless steel deflector above the spinner disk. The spinner frame will include right and left adjustable deflector panels in order to direct salt projected off the spinner to left of center, center and right side discharge patterns.
- e. Spinner shall be mounted independently from the V box. The spinner will be installed into the existing 4" receiver tube on the Pintle plate. The insert weldment on the spinner frame is to be 4" round pipe with a 1/4" wall thickness. The insert tube shall include a weld on stop to allow the pipe to line up with the insert hole in the 4" Pintle hitch receiver tube a truck mounted insert. As well as two "tabs" that center the tube into the hitch assembly in order to easily line up the mounting pin.
- f. Spinner shall be capable of being stored on material spreader when not in use and shall not interfere with the loading or unloading of spreader.
- g. A drawing of the entire removable spinner system is to be provided with the bid package

14. Top Screens:

- a. Top screens shall be constructed of 3/8" steel rods welded to form a 2.5" square mesh, which is framed by a combination of 1/4" X 1-1/2" flat steel and 2" angle iron with the edge supports reinforced by 1/2" X 1" flat bars.
- b. Top screens shall be removable and use drop-n-loc type hinge.
- c. Screens utilizing hardware that may vibrate loose are not acceptable.
- d. Top screens shall be of a flat design to allow loading of V-box into bed.

15. Painting: All stainless steel shall be left unpainted. Carbon steel components shall be chemically cleaned, or sand/media blasted and coated with a lead free rust inhibitive primer and painted with a lead free black enamel.

16. Liquid Chemical Storage:

- a. Four side mounted 200 gallon polyethylene reservoir tanks, two per side shall be provided to allow a total of 800 gallons of liquid capacity.
- b. A 3" top fill port with splash proof vent and a 2" suction port are to be provided in each tank.
- c. Tanks are to be plumbed together with a 2" I.D. hose.
- d. A plumbing/quick fill kit is to be included consisting of:
 - i. Shut-off valves at each tank end
 - ii. Banjo coupler and all necessary fittings to plumb the tanks together
 - iii. Provisions to fill one tank only or both tanks at the same time.
 - iv. Quick drain valve is to be plumbed into the system on the passenger side of the vehicle.

17. Conspicuity: Spreader shall be outfitted with DOT-C2 11" red/7" white or 6" red/6" white parabolic retro-reflective conspicuity tape (Reflexite, 3M or equal) as per TDOT guidelines. Layout pattern shall be provided to the successful bidder.

18. Tailgate Standoff: There shall be tailgate standoffs attached to the spreader to hold raised tailgate off the spreader and spinner chute during spreader operations. Standoffs shall be of a fixed design and shall be made of non-magnetic stainless steel. Standoffs shall not interfere with the operation or the loading or unloading of spreader assembly. Design must be approved by T.D.O.T.

10. Ladder

Stainless steel folding ladder is to be provided and installed on the curb side rear of the spreader hopper. The ladder is to be constructed using 100% non-magnetic

stainless steel material including stainless steel grip punched ladder rungs, vertical bracing, grab handle tubes on each side of the ladder treads and all hardware. The ladder shall provide a "three" point access to the top screens for cleaning. **Due to tailgate standoff design omission of this item will be decided prior to pilot inspection.**

11. Leg Stand Frame:

Leg stand frame and legs shall be hot dipped galvanized **or** stainless steel. Leg stand shall be constructed using 3" X 3" X 3/16" tubing which form four long-members running the length of the stand that support the V box. The front of the stand assembly includes two folding and self-storing 3" X 3" tubular legs which will support the empty weight of the spreader when it has been removed from the dump body. Front legs are to have a minimum of three grease zerks to lubricate the inner tube on which the leg assembly rotates.

The stand shall be equipped with holes spaced on 24" centers for mounting to v-box spreader.

Entire leg-stand frame shall be welded solid where possible.

Legs:

Rear spreader legs are constructed using 3 1/2" X 3 1/2" X 1/4" tubing. **The legs must be capable of lifting above the height of at least 35" above the ground level so as not to interfere with trailer connections and operation.**

Front legs shall be designed to lock at an angle of 90 degrees down in relation to the frame rails for storage, and shall also be designed to swing up, nest between frame rails, and lock for installation into the dump body.

Left and right front upper legs shall be connected by a cross tube constructed from formed 7 gauge steel. Front legs to be bolted to the cross tube.

Left and Right front legs shall be equipped with 1/2" diameter spring loaded pins to lock the legs in the standing and folded positions.

Front upper legs shall be equipped with 5/8" diameter spring-loaded pins to lock lower leg into the desired height.

The spreader stand shall include a guide plate system to assist in loading the spreader into the truck body.

Guide plates are to be constructed using 1/2" thick stainless steel plates which are tapered to guide the spreader into the correct position inside the body and must be designed to position the spreader in the center of the body and thus protect the liquid tanks from damage if the spreader is not properly positioned when loading the unit has begun.

OR

Leg Stand Assembly

Leg stand assembly shall be hot dipped galvanized **or** stainless steel.

Spreader shall come equipped with a storage stand system designed to be bolted directly to the v-box.

Skid type arrangement shall be constructed entirely of structural tubing.
Main frame shall be constructed of 3" X 4" X 1/4" tubing.
There shall be sufficient lateral bracing constructed of 1-1/2" X 3" X 3/16" tubing to support the hopper.

There shall be longitudinal supports constructed of 1-1/2" X 3" X 3/16" tubing with holes spaced on 24" centers for mounting to hoppers.

The forward leg shall be constructed of 3-1/2" X 3-1/2" X 3/16" tubing and shall be adjustable in height and designed to fold up as the vehicle backs underneath the stand.

Cast iron caster wheels with greaseable steel ball bearings shall be mounted at the front of the main frame to allow the unit to roll into the vehicle.

Rear legs shall be of a self-storing telescopic design. **(rear legs must be capable of lifting above the height of 35" above ground level so as not to interfere with trailer connections and operation)**

Lower leg shall be constructed of 3-1/2" X 3-1/2" X 3/16" tubing and shall telescope inside the upper leg that is constructed of 4" X 4" X 3/16" tubing for storage.
Lower rear legs shall be equipped with a swivel mounted foot to provide additional stability during loading and unloading operations.

Leg stand assembly shall be hot dipped galvanized.

Guide plates are to be constructed using 1/2" thick plate steel **or** stainless steel plates which are tapered to guide the spreader into the correct position inside the body and must be designed to position the spreader in the center of the body and thus protect

12. TDOT Salt Spreader Material Deflector System

All V-Box slide-in material spreaders are to be delivered, equipped with the following material deflector system installed on the spreader.

- g. Spreader is to be equipped with a front deflector shield and be constructed from 10 Ga., 201 nonmagnetic stainless steel.
- h. Front deflector is to be welded to the front wall of the spreader body on an angle so as to be self-cleaning, and properly braced to carry the weight of salt that may not fall into the top of the spreader while loading.
- i. Front deflector shield is to extend forward a minimum of 10" in front on the spreader head sheet and must also be long enough to extend over the dump body cab shield a minimum of three inches.

Acceptable V-box brands: Viking, Flink or equal.

Underbody Scraper Blades with ceramic insert, 3' (Item ID 1000176374 and 4' (Item ID 1000176375)

1. Description:

This specification covers snowplow blades for underbody plows with ceramic inserts free floating in vulcanized rubber with the configuration of STEEL-RUBBER-CERAMIC-RUBBER-STEEL.

2. Materials:

Front Steel Plate:

Wear resistant steel with an average hardness of 400HB
 Plate thickness of 8mm
 Hardness: 400HB (43 Rockwell C, 114 Rockwell B)
 Tensile Strength: U.T.S. = 1300 MPa
 Yield Point: Y.P. = 1000 MPa
 Tolerances according to specification of Dillidur 400V

Back Steel Plate:

Wear resistant steel with an average hardness of 400HB
 Plate thickness of 6mm
 Hardness: 400HB (43 Rockwell C, 114 Rockwell B)
 Tensile Strength: U.T.S. = 1300 MPa
 Yield Point: Y.P. = 1000 MPa
 Tolerances according to specification of Dillidur 400V

Rubber:

The blade shall have a wear resistant rubber body, Vulcanized between two steel plates with ceramic inserts embedded within the rubber.

Ceramic inlays:

The inlay must according to DIN ISO
 Hardness of the inlay must be >15000 HV10
 Bending strenght must be over 300 MPa
 The average grain size must be between 2 - 8 μm
 Density 3.65 g/cm²

3. Finished Blades

Overall blade dimensions:

Overall blade height 125mm (tolerance ± 2 mm)

Overall blade thickness 36mm (tolerance ± 2 mm)

Overall blade length according to customer and plow requirements The hole position and design must be according to customer and plow requirements

4. Physical Requirements

All blades shall be straight and free from flaws and injurious defects, and shall have workmanlike finish.

The mounting area must have a physical protection against over tightening of bolts. The percentage of ceramic in the rubber must be more than 38% per foot.

The percentage of ceramic with contact to the road should not be under 35% per foot.

Each blade section should provide the name of the manufacturer and a serial number for quality control.

Acceptable brands are: "Kuper Kombi" or "Joma"

Front Snow Plow Blades, Rubber 3' Section (Item ID: 1000146568)

low –noise and abrasion-resistant rubber blade.

Dimensions: 3 foot long, minimum .75" thick, minimum 7" high

Wear resistant rubber body with ceramic inlays or tungsten carbide inserts.

Standard Highway punching pattern with holes for 5/8" plow bolts.

Mounting hardware for cutting edge system must include cover blade, backer blade, individual carbide or ceramic sections and all necessary mounting bolts and hardware if required.

Acceptable Brands/Models: Kuper GK5, Joma 6000 or Equal

Front Snow Plow Blades, Rubber 4' Section. (Item ID:1000146569)

low –noise and abrasion-resistant rubber blade.

Dimensions: 4 foot long, minimum .75" thick, minimum 7" high

Wear resistant rubber body with ceramic inlays or tungsten carbide inserts.

Standard Highway punching pattern with holes for 5/8" plow bolts.

Mounting hardware for cutting edge system must include cover blade, backer blade, individual carbide or ceramic sections and all necessary mounting bolts and hardware if required.

Acceptable Brands/Models: Kuper GK5, Joma 6000 or Equal